

Math 122 – Gateway Exam Sample Problems

1. $\int (x^{1/7} - x^{-1/7}) dx$
2. $\int e^{-3x} dx$
3. $\int 3e^{-x/2} dx$
4. $\int (4x^{-7} + 7x^6) dx$
5. $\int \frac{x^2 + 3x}{\sqrt{x}} dx$
6. $\int_{-1}^2 (x+1)^2(x-1)^2 dx$
7. $\int_1^5 (x^2 - 1)^2 dx$
8. $\int_{-3}^0 x(x-1) dx$
9. $\int_0^1 t^{1/2}(t+2) dt$
10. $\int_1^4 \frac{e^{-x}}{e^x} dx$
11. $\int \frac{1}{x^2 - 4x + 4} dx$
12. $\int \frac{x^2}{x^3 - 12} dx$
13. $\int x\sqrt{4+x^2} dx$
14. $\int \frac{r}{1+3r^2} dr$
15. $\int \frac{1}{x \ln x} dx$
16. $\int \frac{x-1}{x^2-2x} dx$
17. $\int x^2 \cos x^3 dx$
18. $\int e^x \sin e^x dx$
19. $\int \frac{\sin u}{\cos^2 u} du$
20. $\int \frac{\sin(3 + \ln x)}{x} dx$
21. $\int_0^3 ye^{y^2} dy$
22. $\int_0^1 \frac{2}{x+2} dx$

23. $\int_0^1 (x-1)^{10} dx$
24. $\int_0^{\sqrt{\pi}} x \cos x^2 dx$
25. $\int_0^{\ln 2} \frac{e^x}{1+e^x} dx$
26. $\int_{-1}^1 x^3 \sqrt{1-x^4} dx$
27. $\int_0^1 \frac{\sin x}{\cos x} dx$
28. $\int_0^1 \sin \pi x \cos \pi x dx$
29. $\int_0^{\sqrt{\pi/2}} t \sin(\pi - t^2) dt$
30. $\int_0^2 x(a+x^2)^3 dx$
31. $\int \frac{x}{e^x} dx$
32. $\int \sqrt{y} \ln y dy$
33. $\int x \sin x dx$
34. $\int t \cos 2t dt$
35. $\int 2te^{-t} dt$
36. $\int x^3 \ln 2x dx$
37. $\int \frac{t}{e^{2t}} dt$
38. $\int \frac{1}{x^3} \ln x dx$
39. $\int 3x \cos 2x dx$
40. $\int ue^{-u/2} du$
41. $\int_0^{2\pi} x \cos x dx$
42. $\int_1^e \ln v dv$
43. $\int_0^1 xe^{-x} dx$
44. $\int_0^{\ln 3} xe^{2x} dx$
45. $\int_1^e x^6 \ln x dx$
46. $\int_1^2 \frac{\ln x}{x^2} dx$
47. $\int_1^4 \sqrt{t} \ln t dt$
48. $\int_0^y te^t dt$
49. $\int_0^1 re^{r/2} dr$
50. $\int_0^1 \ln(2x+1) dx$

51.

$$\int_1^3 \frac{(\sqrt{x} + 5)^6}{\sqrt{x}} dx$$

52.

$$\int_0^{\sqrt{\pi/2}} x \sin^2(x^2) \cos(x^2) dx$$

53.

$$\int_{\pi^2}^{4\pi^2} \frac{\sin \sqrt{x} \cos \sqrt{x}}{\sqrt{x}} dx$$

54.

$$\int_1^4 \frac{(4 + \sqrt{r})^2}{\sqrt{r}} dr$$

55.

$$\int_0^1 \frac{\cos \pi x}{4 + \sin \pi x} dx$$

56.

$$\int \frac{(1 + e^{\sqrt{x}})e^{\sqrt{x}}}{\sqrt{x}} dx$$

57.

$$\int \frac{\cos u}{\sin^2 u - \sin u + .25} du$$

58.

$$\int e^x (e^x + 2)^{10} dx$$

59.

$$\int \sin t (\cos t + 5)^7 dt$$

60.

$$\int \frac{e^{\sqrt{t+1}}}{\sqrt{t+1}} dt$$

61.

$$\int_2^{\infty} \frac{1}{x^2} dx$$

62.

$$\int_1^{\infty} \frac{1}{\sqrt{x}} dx$$

63.

$$\int_0^{\infty} e^{-\pi x} dx$$

64.

$$\int_{-\infty}^{\infty} x e^{-x^2} dx$$

65.

$$\int_{-\infty}^{-2} \frac{1}{x^2} dx$$

66.

$$\int_1^3 \frac{1}{x^2 - 2x + 1} dx$$

67.

$$\int_0^1 \frac{1}{\sqrt{t}} dt$$

68.

$$\int_0^1 t^{-3/2} dt$$

69.

$$\int_0^1 \frac{x}{\sqrt{1-x^2}} dx$$

70.

$$\int_0^{\infty} \frac{1}{1+u^2} du$$

71.

$$\int_{-1}^1 |x| dx$$

72.

$$\int_0^3 |x-2| dx$$

73.

$$\int_0^4 |x^2-1| dx$$

74.

$$\int_2^4 |x-2| dx$$

75.

$$\int_{-1}^1 \sqrt{|x|} dx$$

76.

$$\int_{-1}^1 \frac{1}{1+x^2} dx$$

77.

$$\int_0^1 \frac{1}{\sqrt{1-x^2}} dx$$

78. $\int 2^x 3^x dx$
79. $\int y 2^{y^2} dy$
80. $\int_1^2 \frac{1}{4+u^2} du$
81. $\int x^3 \sin x^2 dx$
82. $\int w^3 e^{-w^2} dw$
83. $\int_0^1 \frac{x}{1+x^4} dx$
84. $\int x^2 \sin x dx$
85. $\int_0^1 v^2 \cos v dv$
86. $\int 3s^2 \ln(s^3) ds$
87. $\int \frac{x}{\sqrt{1-x^4}} dx$
88. $\int_2^4 k^2 e^k dk$
89. $\int \frac{9x^2}{1+9x^6} dx$
90. $\int \frac{4u}{\sqrt{1-4u^4}} du$
91. $\int \frac{1}{x^2+2x+5} dx$
92. $\int_0^1 \frac{3x+1}{x^2-x-6} dx$
93. $\int \frac{1}{x^3+x} dx$
94. $\int_2^3 \frac{1}{x^2-1} dx$
95. $\int_0^1 \frac{x-1}{x^2+3x+2} dx$
96. $\int \frac{x-9}{(x+5)(x-2)} dx$
97. $\int \frac{1}{x^2+4x+5} dx$
98. $\int_7^{12} \frac{6}{t^2+2t-8} dt$
99. $\int \frac{1}{y^2+2y+4} dy$
100. $\int \frac{-3x-2}{(x^2+2)(x-3)} dx$